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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/848,933

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Michael Lewis

LLP127US

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EXAMINER

TRAN, KHANH C

ART UNIT

PAPER NUMBER

2611

NOTIFICATION DATE

DELIVERY MODE

07/09/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing@eschweilerlaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/848,933	<b>Applicant(s)</b> LEWIS, MICHAEL	
	<b>Examiner</b> KHANH C. TRAN	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-9 is/are allowed.
- 6) ☒ Claim(s) 1, 10, 11 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 12-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/15/2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. The Amendment filed on 1/30/2009 has been entered. Claims 1-22 are still pending in this Office action.

### ***Response to Arguments***

2. Rejection of claims 10-19 and 21 under 35 U.S.C. 101 have been withdrawn after Applicants amended claims.

3. Applicant's arguments filed on 1/30/2009 have been fully considered but they are not persuasive.

In response to Applicants' arguments on pages 9-11 of the Remarks, the Examiner's position is that the combination of frequency correction block 10, FFT block 12, and phase correction block 22 in admitted prior art FIG. 6 is equated to the first system claimed; the combination of demodulation block 14, error correction block 16, re-modulation block 20 and frequency estimation block 18 is equated to the second system claimed; and the pilot-based phase estimation block 24 is equated to the control system claimed. First, the pending claim does not provide the manner how the claimed control system gradually switches from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking. As recited in the last Office action, because the pilot-based phase estimation block continues to estimate the phase error

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and residual frequency error until obtaining reliable data estimates (i.e. acceptable error rate), one of ordinary skill in the art at the time the invention was made would have been recognize that the processing gradually switches from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking ***instead of switching over abruptly since the residual frequency errors are not completely eliminated***; see further in paragraph [0022] of the original disclosure. For that reason, all rejections in the last Office action are maintained.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 10-11 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art of FIGS. 5-6.

Regarding claim 1, in paragraph [0020], FIG. 5 discloses a pilot-based phase and frequency tracking. In paragraph [0024], FIG. 6 further discloses data-based tracking for the remainder of the transmission, using a combined architecture such as that shown in FIG. 6. In paragraph [0020], FIG. 5 further discloses a phase correction block 22 connected to the block 12 and to the block 14. There is also a pilot-based phase estimation block 24 connected to the block 10 and to the block 22. The pilot-based

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phase estimation block 24 extracts the pilot sub-carriers from the data stream, and uses them to calculate an estimate of the phase rotation for the current OFDM symbol. In paragraph [0021], the residual frequency error is estimated based on the symbol-by-symbol rate of phase change, and is feeding back this estimate to the frequency correction block, which adds the residual frequency error estimate to the correction frequency.

FIG. 6 admitted prior art does not disclose that a control system connected gradually switching from the pilot based phase and frequency tracking to the data-based phase and frequency tracking as claimed in the application claim.

From FIG. 6 admitted prior art, the pilot-based phase estimation block 24 estimates of the phase rotation for the current OFDM symbol, in which the estimate of the phase error is then used by the phase correction block 22 to de-rotate the received symbol prior to demodulation, and the residual frequency error estimated based on the symbol-by-symbol rate of phase change in which the estimated residual frequency error is fed back to the frequency correction block 10 to add the residual frequency error estimate to the correction frequency. As further disclosed in paragraph [0024], since large and rapid frequency deviations are observed only near the beginning of the transmission, it is desirable to be able to use robust pilot-based tracking near the beginning of the transmission, but to switch over to less noisy, but slower data-based tracking for the remainder of the transmission, using a combined architecture such as that shown in FIG. 6.

The combination of frequency correction block 10, FFT block 12, and phase correction block 22 in admitted prior art FIG. 6 is equated to the first system claimed; the combination of demodulation block 14, error correction block 16, re-modulation block 20 and frequency estimation block 18 is equated to the second system claimed; and the pilot-based phase estimation block 24 is equated to the control system claimed. First, the pending claim does not provide the manner how the claimed control system gradually switches from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking. As recited in the last Office action, because the pilot-based phase estimation block continues to estimate the phase error and residual frequency error until obtaining reliable data estimates (i.e. acceptable error rate), one of ordinary skill in the art at the time the invention was made would have been recognize that the processing gradually switches from the pilot-based phase and frequency tracking to the data-based phase and frequency tracking ***instead of switching over abruptly since the residual frequency errors are not completely eliminated.***

Regarding claim 10, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 11, claim is rejected on the same ground as for claim 1 because of similar scope. Furthermore, since the pilot-based phase estimation block continues to estimate the phase error and residual frequency error until obtaining reliable data estimates (i.e. acceptable error rate), one of ordinary skill in the art at the time the

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invention was made would have recognized that the weight factors are decreasing in relation to gradual reducing the effect of the pilot based phase and frequency tracking, respectively.

Regarding claim 19, claim is rejected on the same ground as for claim 1 because of similar scope.

Admitted prior art does not disclosed a computer program product as set forth in the application claim.

However, for purposes of testing and simulation, one of ordinary skill in the art at the time the invention was made would have been motivated to implement a computer program product comprising software code portions as claimed.

Regarding claim 20, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 21, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 22, FIG. 6 admitted prior art discloses a frequency correction block 10 and a phase correction block 22.

***Allowable Subject Matter***

5. Claims 2-9 are allowed.

6. Claims 12-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

**7. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH C. TRAN whose telephone number is (571)272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

***/KHANH C. TRAN/  
Primary Examiner, Art Unit 2611***